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10/663,422	09/16/2003	Hiroshi Sumihiro	7217/70905	2711

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EXAMINER	
STIGLIC, RYAN M	

ART UNIT	PAPER NUMBER
2112	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,422	SUMIHIRO, HIROSHI	
	Examiner	Art Unit	
	Ryan M. Stiglic	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 16 September 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-5 are pending and have been examined.

2. Claims 1-5 are rejected.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It was not executed in accordance with either 37 CFR 1.66 or 1.68.

Applicant's signature is absent from the Oath/Declaration filed September 16, 2003. See MPEP § 602.

Drawings

4. Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claim 4 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 4 is directed towards a storage medium that is not necessarily computer readable. As currently presented claim 4 reads on a sheet of paper containing a computer-readable program for causing the computer to execute various steps.

7. Claim 5 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 5 is not tangibly embodied on a computer readable medium and is therefore non-statutory.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Kurth (6880028B2).

For claim 1:

An information processing apparatus comprising:

- receiving means having a plurality of inputs for respectively receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, req lines are received by Arbiter **102** through a plurality of receiving means; col. 2, ll. 65-66) ;
- measurement means for measuring time limit of each of said plurality of modules based on the request signal received by each of said plurality of inputs of said receiving means (Fig. 2, 202; col. 3, ll. 25-26; col. 5, ll. 17-27; Fig. 6);
- priority determination means for determining a priority of bus acquisition of said plurality of modules according to the time limit measured by said measurement means (Fig. 6; col. 5, ll. 17-27); and
- control means for controlling acquisition of the bus for said plurality of modules based on the priority determined by said priority determination means (col. 3, ll. 1-17).

For claim 2:

The information processing apparatus according to claim 1, wherein said priority determination means determines priority by means of a round-robin method when there is a plurality of modules having a same time limit as measured by said measurement means (col. 3, ll. 1-17).

For claim 3:

An information processing method comprising the steps of:

- receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, req lines are received by Arbiter **102** through a plurality of receiving means; col. 2, ll. 65-66);
- measuring time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (Fig. 2, 202; col. 3, ll. 25-26; col. 5, ll. 17-27; Fig. 6);
- determining priority of bus acquisition of said plurality of modules according to a time limit as measured in said of measuring (Fig. 6; col. 5, ll. 17-27); and
- controlling acquisition of bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 1-17).

For claim 4:

A storage medium for storing a computer-readable program (col. 3, ll. 56-61) for causing the computer to execute the steps of:

- measuring time limit of each of a plurality of modules based on a request signal received for each of a plurality of modules, for requesting bus acquisition (Fig. 2, 202; col. 3, ll. 25-26; col. 5, ll. 17-27; Fig. 6);
- determining priority of bus acquisition of said plurality of modules according to the time limit measured in said step of measuring (Fig. 6; col. 5, ll. 17-27); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 1-17).

For claim 5:

A computer-readable program (col. 3, ll. 56-61) for causing the computer to execute the steps of:

- measuring a time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (Fig. 2, 202; col. 3, ll. 25-26; col. 5, ll. 17-27; Fig. 6);
- determining a priority of bus acquisition of said plurality of modules according to a time limit as measured in said step of measuring (Fig. 6; col. 5, ll. 17-27); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 1-17).

10. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Nunziata et al. (5572686).

For claim 1:

An information processing apparatus comprising:

- receiving means having a plurality of inputs for respectively receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, 22; col. 3, ll. 31-33);
- measurement means for measuring time limit of each of said plurality of modules based on the request signal received by each of said plurality of inputs of said receiving means (col. 4, ll. 61-64);

- priority determination means for determining a priority of bus acquisition of said plurality of modules according to the time limit measured by said measurement means (col. 3, ll. 19-37; col. 4, line 35 – col. 5, line 10); and
- control means for controlling acquisition of the bus for said plurality of modules based on the priority determined by said priority determination means (col. 3, ll. 27-29).

For claim 2:

The information processing apparatus according to claim 1, wherein said priority determination means determines priority by means of a round-robin method when there is a plurality of modules having a same time limit as measured by said measurement means (col. 7, ll. 25-28).

For claim 3:

An information processing method comprising the steps of:

- receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, 22; col. 3, ll. 31-33);
- measuring time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (col. 4, ll. 61-64);
- determining priority of bus acquisition of said plurality of modules according to a time limit as measured in said of measuring (col. 3, ll. 19-37; col. 4, line 35 – col. 5, line 10); and
- controlling acquisition of bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 27-29).

For claim 4:

A storage medium for storing a computer-readable program (col. 6, ll. 13-17) for causing the computer to execute the steps of:

- measuring time limit of each of a plurality of modules based on a request signal received for each of a plurality of modules, for requesting bus acquisition (col. 4, ll. 61-64);
- determining priority of bus acquisition of said plurality of modules according to the time limit measured in said step of measuring (col. 3, ll. 19-37; col. 4, line 35 – col. 5, line 10); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 27-29).

For claim 5:

A computer-readable program (col. 6, ll. 13-17) for causing the computer to execute the steps of:

- measuring a time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (col. 4, ll. 61-64);
- determining a priority of bus acquisition of said plurality of modules according to a time limit as measured in said step of measuring (col. 3, ll. 19-37; col. 4, line 35 – col. 5, line 10); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, ll. 27-29).

11. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hewitt et al. (5956493).

For claim 1:

An information processing apparatus comprising:

- receiving means having a plurality of inputs for respectively receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, 180 & REQ[7:0]; col. 3, line 61 – col. 4, line 10);
- measurement means for measuring time limit of each of said plurality of modules based on the request signal received by each of said plurality of inputs of said receiving means (col. 4, ll. 31-44);
- priority determination means for determining a priority of bus acquisition of said plurality of modules according to the time limit measured by said measurement means (col. 4, ll. 11-22); and
- control means for controlling acquisition of the bus for said plurality of modules based on the priority determined by said priority determination means (col. 3, line 61 – col. 4, line 10).

For claim 3:

An information processing method comprising the steps of:

- receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, 180 & REQ[7:0]; col. 3, line 61 – col. 4, line 10);

- measuring time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (col. 4, ll. 31-44);
- determining priority of bus acquisition of said plurality of modules according to a time limit as measured in said of measuring (col. 4, ll. 11-22); and
- controlling acquisition of bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, line 61 – col. 4, line 10).

Claim Rejections - 35 USC § 103

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt et al as applied to claim 1 above and what was well known in the art as evidenced by Tran (5519837).

As stated above Hewitt teaches receiving means having a plurality of inputs for respectively receiving a request signal for requesting bus acquisition for each of a plurality of modules (Fig. 1, 180 & REQ[7:0]; col. 3, line 61 – col. 4, line 10); measurement means for measuring time limit of each of said plurality of modules based on the request signal received by each of said plurality of inputs of said receiving means (col. 4, ll. 31-44); priority determination means for determining a priority of bus acquisition of said plurality of modules according to the time limit measured by said measurement means (col. 4, ll. 11-22); and control means for controlling acquisition of the bus for said plurality of modules based on the priority determined by said priority determination means (col. 3, line 61 – col. 4, line 10). *Official Notice* is taken in that implementing round robin selection methods are well known arbitration methods in the art. Round Robin arbitration algorithms are useful for resolving conflicting requests from devices of

equal priority because they ensure fairness while providing good throughput, as evidenced by Tran (col. 1, ll. 30-37).

13. Claims 4 and 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt in view of Tanenbaum ("Structured Computer Organization").

For claim 4:

Hewitt teaches a computer system which executes the steps of:

- measuring time limit of each of a plurality of modules based on a request signal received for each of a plurality of modules, for requesting bus acquisition (col. 4, ll. 31-44);
- determining priority of bus acquisition of said plurality of modules according to the time limit measured in said step of measuring (col. 4, ll. 11-22); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, line 61 – col. 4, line 10).

Hewitt however does not teach the method above implemented in software embodied on a computer readable storage medium.

Tanenbaum teaches any instruction executed by the hardware can also be simulated in software (page 11). Furthermore, "The decision to put certain functions in hardware and others in software is based on such factors as cost, speed, reliability, and frequency of expected changes (page 11)."

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the hardware methods as taught by Hewitt as software instructions as suggested by Tanenbaum because hardware and software are logically equivalent.

For claim 5:

Hewitt teaches a computer system which executes the steps of:

- measuring a time limit of each of said plurality of modules based on a request signal requesting bus acquisition received for each of the plurality of modules (col. 4, ll. 31-44);
- determining a priority of bus acquisition of said plurality of modules according to a time limit as measured in said step of measuring (col. 4, ll. 11-22); and
- controlling acquisition of the bus for said plurality of modules based on the priority as determined in said step of determining priority (col. 3, line 61 – col. 4, line 10).

Hewitt however does not teach the method above implemented in software embodied on a computer readable storage medium.

Tanenbaum teaches any instruction executed by the hardware can also be simulated in software (page 11). Furthermore, "The decision to put certain functions in hardware and others in software is based on such factors as cost, speed, reliability, and frequency of expected changes (page 11)."

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The various prior art cited relates to timer based arbitration schemes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan M. Stiglic whose telephone number is 571.272.3641. The examiner can normally be reached on Monday - Friday (6:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571.272.3676. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul R. Myers

RMS

PAUL R. MYERS
PRIMARY EXAMINER